



# Applications of Earth Observation and GIS in Integrated Water Resources Management

16 weeks: 7 January - 25 April 2008  
Nairobi, Kenya



This postgraduate course will provide professionals in the field of IWRM with practical tools and methods which are in-line with the recent advances in research and development and are directly applicable. Correct data, knowledge of hydrology, and proper modelling are the main requirements for the development of realistic integrated water management plans. The availability of modern data acquisition and analysis tools has greatly increased over the last few years while the inherent cost has dramatically reduced. Organizations such as basin authorities dealing with Integrated Water Resources Management (IWRM) could benefit from these data acquisition and analyses developments.

## New developments-directly applicable

Participants will have the opportunity to work on their own spatial data and case-studies. Public domain software, satellite data and well-established analysis methods are being used.

A few months after ending the course, a three-days workshop will be organized where participants can present the impact of the training on their work performance and their achievements to each other and other interested partners and sponsors.

## Target groups

The course is developed for professionals in water and environmental management and related fields. It especially focusses on organisations working for ministries, water and environmental institutions (Water Management Authorities, National Environmental Agencies), Basin Development Authorities, NGO's, Universities, consultancy firms and research institutes, preferably involved in data collection and analysis for preparation of reports used in decision making and policy review.

## Modular Course set-up

The course consists of six modules and a three-day workshop.

Modules (Each module can be taken separately)	Duration	Venue
1 Principles of Earth Observation and GIS	5 weeks	RCMRD
2 Principles of IWRM	1 week	RCMRD
3 Advances in computational methods for WRM	2 weeks	Egerton Univ.
4 GIS-based catchment modeling incl. DEM hydro-processing	3 weeks	Egerton Univ.
5 Groundwater system analyses and modelling	2 weeks	Egerton Univ.
6 Application of RS and GIS in Water Resources studies	3 weeks	RCMRD

After 3 months:

7 Workshop on GIS-RS applications for IWRM	3 days	RCMRD
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## What can you expect from this course?

This course will address the concepts of (geo-)hydrology, Earth Observation (EO), GIS, primary and secondary data collection and their integration in order to investigate water resources related issues on a (small) basin scale.

The course will address the following advances:

- new developments in the field of IWRM and computational methods for water resources
- innovations in data collection (sensors, satellite observation, loggers and GPS)
- development of web-based public domain data acquisition
- new advances in EO-GIS, modelling and scenario analyses techniques.

The objectives of the course are:

- describe data requirements for and methodology of IWRM
- provide working knowledge on GIS and EO applications for IWRM
- demonstrate advances in the field of data acquisition and processing for water resources management
- demonstrate, through fieldwork, data collection techniques and remotely sensed data verification methods
- provide the opportunity to build case-studies based on 'own' spatial data
- to provide a platform for an informal network.



## Profile of the participating institutes

Since its establishment in 1975, the *Regional Centre for Mapping of Resources for Development (RCMRD)* has been very instrumental in capacity building in resource survey, mapping, remote sensing, GIS and natural resources assessment and management in Africa. It was also instrumental in helping different countries establish their National Mapping Agencies. To date the Centre has trained over 4000 technical officers from its member States and other African countries in the fields of surveying and mapping, remote sensing, GIS and natural resources assessment and management. For more information: <http://www.rcmr.org>.

The *School for Disaster Geo-information Management* has been established by the *International Institute for Geo-Information Science and Earth Observation (ITC)*. Within the context of the UNU-ITC Joint Programme on Capacity Building in Disaster Management and in Land Administration, the School aims to provide support in this area through education and capacity building, research, advisory services, and expert meetings. For more information: <http://www.itc.nl/unu/dgim/default.asp>.

*Egerton University* is the oldest institution of higher learning in Kenya with a strong focus on agriculture, natural resources, environment and water. The Water and Environmental group at Egerton University has already build experience in the use of GIS/EO in water and environmental management and it is the ambition to become a renowned centre for application of GIS in this area. The University is located in the Naivasha – Elementaita - Nakuru (NEN) basin. For more information: <http://www.egerton.ac.ke>

The department of *Earth Sciences of Addis Ababa University (AAU)* is one of the oldest departments in Ethiopia, which provides eighteen different MSc courses in various earth science fields. It is the only department in Ethiopia, which provides Hydrogeology and RS-GIS at MSc level. It has also wide experience in research and consultancy services in a variety of water and land resources evaluation and management subjects. For more information: <http://www.aau.edu.et/>.

## Assessment and certification

Certificates are awarded to participants who have successfully completed the full 16-week course programme. Arrangements for Credit point transfer (25 ECTS) to MSc courses in Egerton University and ITC are being made. Certificates of Attendance are awarded to participants attending one or more modules.

## Admission requirements

Applicants should have a BSc degree or equivalent from a recognised university in fields such as Hydrology, Water Resources, Meteorology, Civil Engineering, Earth and Natural Sciences, Agricultural Engineering and other related fields preferably combined with relevant working experience. As the course is given in English, proficiency in the English language is a prerequisite.

## Financial matters

- Tuition fee: US\$ 3,000 for full course - 200 US\$ / week
- Accommodation and living costs: 35 US\$ / day (est.)

## Funding opportunities

Matching fellowships are available. Co-funding arrangements can be made through the school for Disaster Geo-Information Management (ITC).

## Application deadlines

Your applications should reach us before 1 October 2007.

## More information

For detailed information please visit: ITC's [www.itc.nl](http://www.itc.nl), RCMRD's [www.rcmr.org](http://www.rcmr.org) or Egerton's [www.egerton.ac.ke](http://www.egerton.ac.ke) website.

Or contact:

Ir. Arno van lieshout, ITC ([lieshout@itc.nl](mailto:lieshout@itc.nl))

Dr. Tesfay Korme, RCMRD ([korme@rcmr.org](mailto:korme@rcmr.org))

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*Lake Nakuru Catchment and the main tributaries contributing to the lake from SRTM*



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